

Upper Owyhee Watershed TMDL Implementation Plan for Agriculture



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Preface

The Upper Owyhee Watershed TMDL Implementation Plan was drafted by land management agencies that affect water quality in this area. The Idaho Association of Soil Conservation Districts (IASCD) represents private landowners and wrote the majority of the plan. The Bureau of Land Management (BLM) is the largest landowner in the area. The Department of Lands (IDL) manages State-owned land. The TMDL and the resulting Implementation Plan do not address the Duck Valley Reservation lands and waters.

Tracking Accomplishments

The Department of Environmental Quality will track annually the accomplishments that Land Management Agencies have had to achieve Water Quality Standards. The DEQ, BLM, IDL, and IASCD agree to meet each December to document what projects occurred over the previous field season. Projects will be compared with the Tasks and Milestones that are outlined in respective portions of the implementation plan (see Appendix X).

Introduction

The federal Clean Water Act (CWA) requires that states and tribes restore and maintain chemical, physical, and biological integrity of the Nation’s waters (33 USC 1251.101). In response to Idaho’s 1998 303(d) list of impaired water bodies, the Department of Environmental Quality (IDEQ) has prepared a Total Maximum Daily Load (TMDL) for specific stream segments within the Upper Owyhee River Watershed (IDEQ, 2003). The TMDL requires that certain pollutants identified within these stream segments be reduced in order to meet state water quality standards and restore designated beneficial uses.

Figure 1. Watershed Location

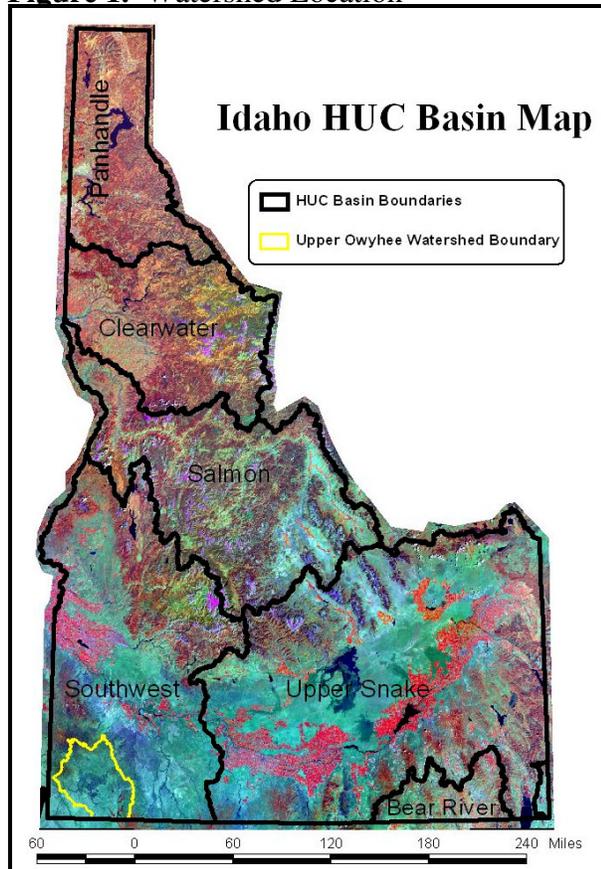


Table 1. Pollutant Summary

<i>Upper Owyhee Watershed HUC# 17050104</i>		
Stream Segment with TMDL Allocation	WQLS	Pollutants
Blue Creek Reservoir	2627	Sediment
Juniper Basin Reservoir	2625	Sediment
Deep Creek	2830	Sediment Temperature
Pole Creek	2617	Sediment Temperature Flow
Castle Creek	2616	Sediment Temperature
Battle Creek	2621	Bacteria
Shoofly Creek	2630	Bacteria
Red Canyon Creek	2613	Sediment Temperature Flow
Nickel Creek	6618	Sediment

Purpose

The purpose of this TMDL Implementation Plan for Agriculture is to provide a prioritization strategy for implementing conservation improvements on privately owned riparian areas. The intent is to help restore designated beneficial uses on the 303(d) listed streams within the Upper Owyhee Watershed by reducing pollutant contributions from privately owned parcels of land. The costs to install BMPs on private agricultural lands are estimated in this plan to provide the local community, government agencies, and watershed stakeholders some perspective on the economic demands of meeting TMDL goals. Availability of cost-share funds to agricultural producers within the Upper Owyhee Watershed will likely be necessary to meet the TMDL requirements within each stream segment that received a load reduction target.

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Goals and Objectives

The goal of this plan is to assist and/or compliment other watershed efforts to restore beneficial uses for the 303(d) listed stream segments within the Upper Owyhee Watershed. The agricultural component of the Upper Owyhee Watershed TMDL Implementation Plan includes an adaptive management approach for the implementation of Resource Management Systems (RMSs) and Best Management Practices (BMPs) to meet the requirements for the Upper Owyhee River TMDL. The primary objectives of this plan are to reduce the amount of sediment entering the Upper Owyhee River system and, where feasible, to decrease stream temperatures by increasing shading along stream corridors. Agricultural RMSs and BMPs on privately owned land will be developed and implemented on site with individual agricultural operators as per the 2003 Idaho Agricultural Pollution Abatement Plan (APAP).

The state of Idaho has adopted a non-regulatory approach to control agricultural nonpoint sources. However, regulatory authority can be found in the Idaho Water Quality Standards and Wastewater Treatment Requirements (IDAPA 58.01.02.350.01 through 58.01.02.350.03), which provides direction to the agricultural community and includes a list of approved BMPs. A portion of the APAP outlines responsible agencies or elected groups designated to address nonpoint source pollution problems. For agricultural activities on private land, the Owyhee Soil Conservation District and the Bruneau River Soil Conservation District in cooperation with the Idaho Soil Conservation Commission (ISCC), the Idaho Association of Soil Conservation Districts (IASCD), and the Natural Resource Conservation Service (NRCS) can assist landowners in developing and implementing conservation plans that incorporate BMPs that will help meet TMDL allocation targets.

Background

The Upper Owyhee Watershed encompasses a remote region of the Owyhee Mountain Range. There are no known point source discharges on any of the stream segments within the watershed boundary. The goal of the TMDL allocations within the Upper Owyhee Watershed is to achieve state of Idaho water quality standards for temperature and sediment in order to restore and maintain a healthy biological community for the full support of cold water aquatic life and salmonid spawning. The load allocations require heat reductions for temperature and reduction strategies for various types of sediment including total suspended solids, substrate, streambank erosion, and turbidity. For temperature, a surrogate target of percent shading was developed by IDEQ.

Climate

The climate within the Upper Owyhee Watershed is characteristic of the Columbia Plateau Region. This area is relatively arid with cool, moist winters and hot, dry summers. Mean annual precipitation for the Upper Owyhee Watershed ranges from 9.6 inches to 14.6 inches. Most of the precipitation falls during November, December, and January. Snow typically accumulates at the higher elevations during this period and melts during the spring months of March, April, and May. July and August are the hottest months with a mean maximum air temperature typically reaching 95 to 100 degrees F.

Soils

The following is an excerpt from the Upper Owyhee Watershed SBA-TMDL (DEQ, 2003):

Soils within the high plateau areas are a thin veneer of sediment from alluvial, fluvial, colluvium, ancient lakebeds, and landslide sources. Soils are generally characterized as

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acidic/xeric or soil moisture regime and mesic frigid soil temperature regime. Soils are classified as silt loams to clay loams and range from shallow to deep. Rock fragments can be found scattered in the soil and within the soil profile.

Stream sediment is mostly of alluvial origin. However, in steep canyon areas, large boulders can be found from landslides and talus slopes. In areas where stream gradient lessens, sandy or sandy-loam soils can be found. The depositional area in the larger streams is usually associated with flashy storm event flows or springtime flooding.

Smaller 3rd order stream (Castle Creek, Pole Creek) valley bottom types dictate stream morphology and near stream soils. In many areas, the remnants of beaver dams can be seen, which would indicate stream channel buildup associated with the trapped sediment. As beavers were removed and dams failed, the streams cut down through the depositional areas of fine alluvial deposits (fine sediment and sands).

Land Ownership

The majority of land within the Idaho portion of the Upper Owyhee Watershed consists of public land managed by the Bureau of Land Management (BLM). The land within the Duck Valley Indian Reservation (managed by the Bureau of Indian Affairs) accounts for the second largest area of ownership, followed by Idaho Department of Lands (IDL). The remaining land area, accounting for the fewest acres of ownership, consists of privately owned ranches (Table 2). Land ownership is displayed geographically in Figure 2. Land ownership by miles of stream is depicted in Table 3. Privately owned land accounts for the second largest portion of stream miles. Indian Reservation lands are not present in Table 3.

Table 2. Land Ownership

Owner	Acres	Percent
B.L.M.	746,833	73.8%
Bureau of Indian Affairs	122,375	12.1%
Open water	4,117	.4%
Private	65,653	6.5%
State of Idaho*	73,433	7.3%
Total	1,012,411	100.0%

Reference-DEQ2003, Upper Owyhee Watershed SBA-TMDL

*State of Idaho acres adjusted to actual total

Figure 2. Upper Owyhee Watershed Land Ownership

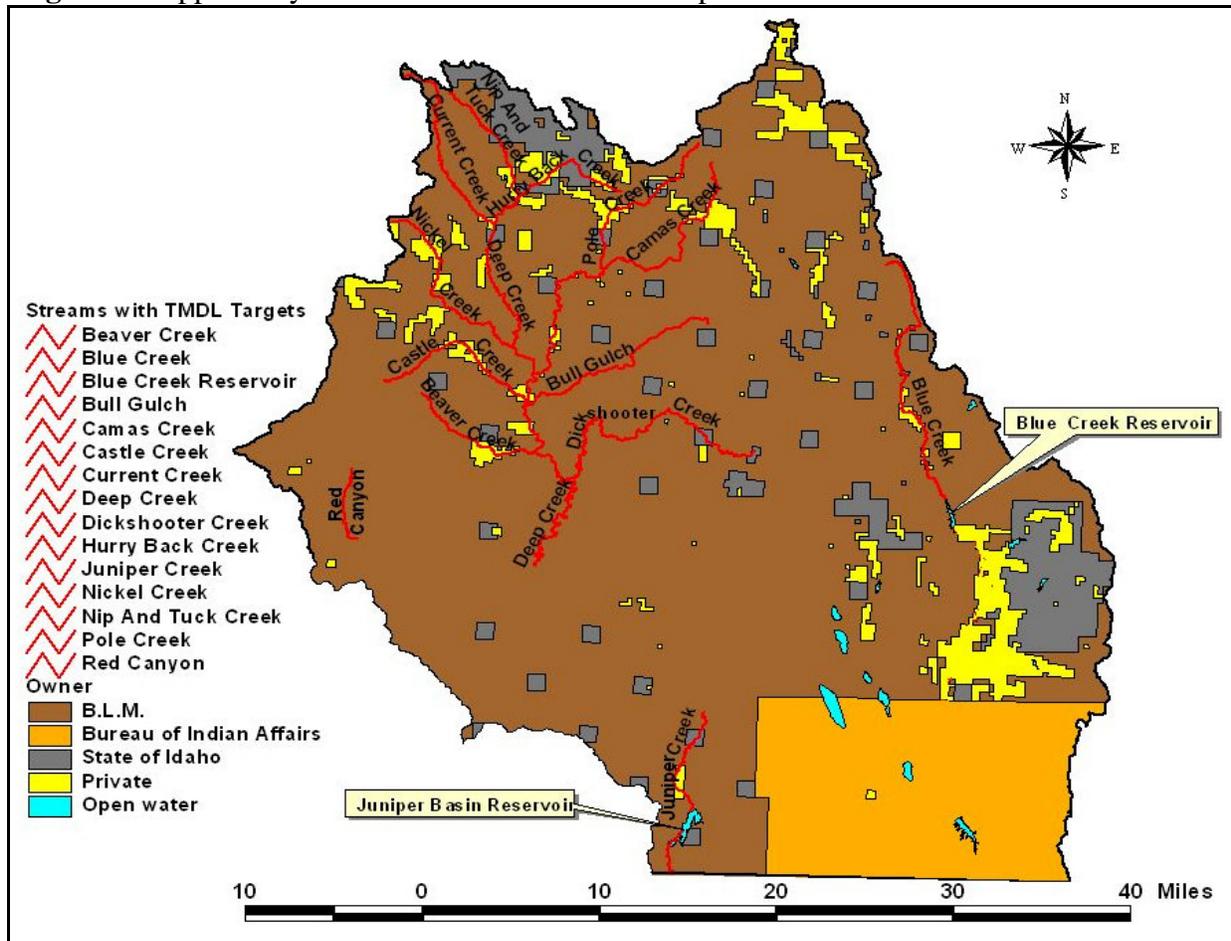


Table 3: Stream Miles by Land Ownership

Segment name	B.L.M.	Open water	Private	State of Idaho	Grand Total
Beaver Creek	42.6	0.0	23.4	0.0	66.0
Blue Creek Reservoir	0.0	4.1	0.0	0.0	4.1
Blue Creek	99.5	0.0	43.1	6.2	148.9
Bull Gulch	104.0	0.0	0.2	2.8	107.0
Camas Creek	82.7	0.0	20.6	0.0	103.3
Castle Creek	43.1	0.0	40.3	0.0	83.4
Current Creek	92.3	0.0	7.7	0.0	100.0
Deep Creek	237.7	0.0	13.7	8.1	259.4
Dickshooter Creek	151.5	0.0	0.0	15.8	167.3
Hurry Back Creek	23.1	0.0	32.6	26.2	81.9
Juniper Creek	64.0	10.7	10.7	11.0	96.3
Nickel Creek	82.0	0.0	20.8	0.0	102.8
Nip and Tuck Creek	41.7	0.0	17.9	7.6	67.1
Pole Creek	114.7	0.0	54.4	8.8	177.9
Red Canyon	38.3	0.0	0.0	0.0	38.3
Grand Total	1,217.3	14.7	285.3	86.5	1,603.8
<i>Percent of Total Miles</i>	<i>76%</i>	<i>1%</i>	<i>18%</i>	<i>5%</i>	<i>100%</i>

Land Use and Cover

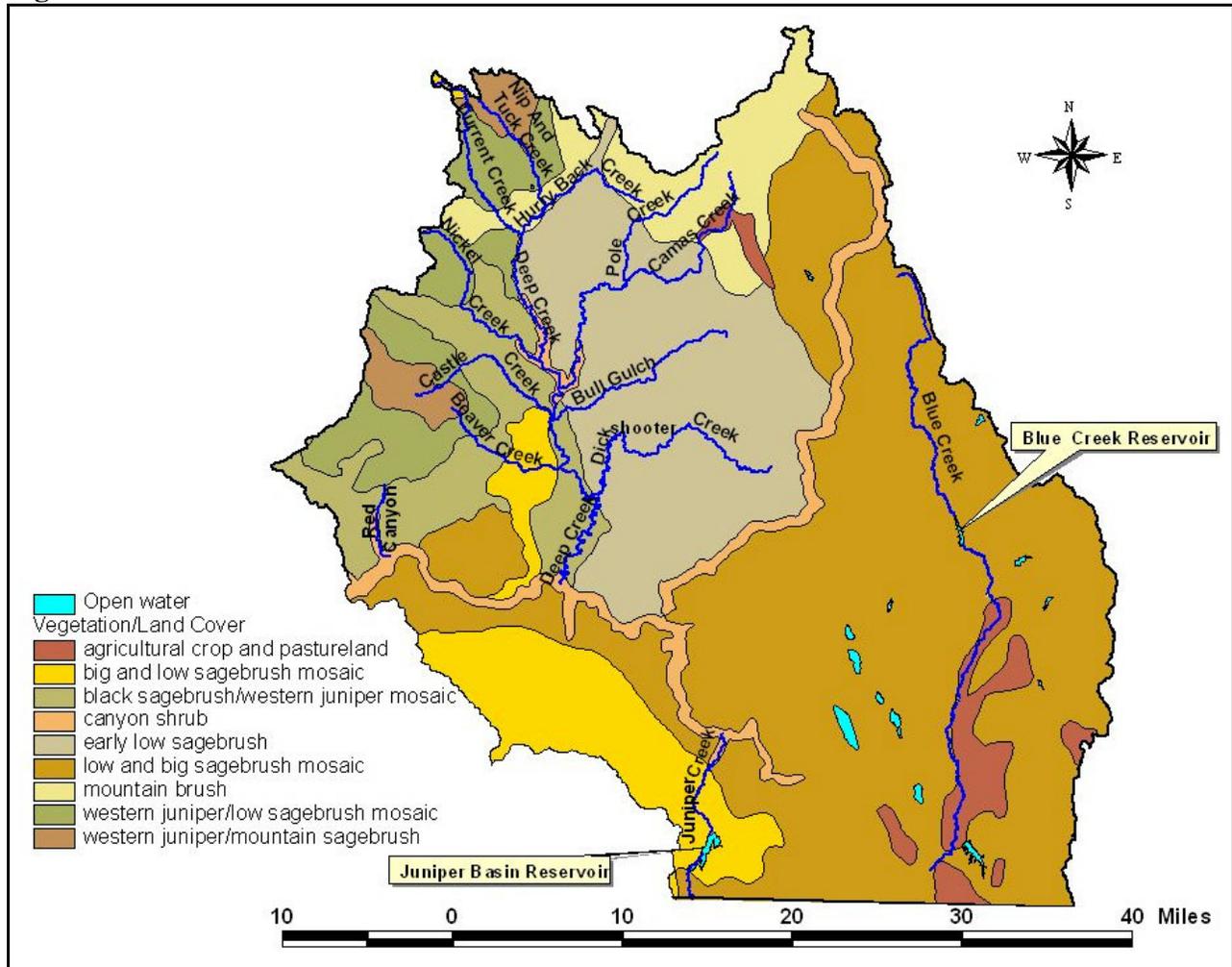
Agricultural land use consists primarily of dryland grazing with very few acres of irrigated pasture adjacent to streams. Beef cattle are the primary species of domestic livestock that utilize land within the Upper Owyhee Watershed.

Figure 4 displays the general land cover for the Upper Owyhee Watershed. The majority of the “canyon shrub” region depicted on the map coincides with the East Fork of the Owyhee River into which the other tributaries drain. As evidenced by Figure 4 (as well as in-field evaluation of available cover and general terrain) livestock grazing is the most practical use of the majority of land within the Upper Owyhee Watershed. Additionally, existing Best Management Practices associated with livestock grazing activities (ie. water developments) have helped to increase and sustain wildlife populations within the watershed. This area is home to the California Bighorn, mule deer, elk, antelope, sage grouse, chucker, quail, mountain lions, bobcats, and various other game and non-game species of wildlife.

Private Land Use & Management

All privately owned stream segments assessed during the 2003 Riparian Assessment by ISCC and IASCD still have active riparian livestock grazing. There are public land allotments associated with these private land areas. These allotments consist mainly of BLM managed lands. Multiple resources are managed and grazing duration and locations are adjusted according to BLM policy. Private lands are often used as holding areas before and after public land grazing periods. Most private land areas consist of wider valleys with lower stream gradients.

Figure 3. Land Cover



Existing Efforts and Accomplishments

It was determined during the 2003 Upper Owyhee Riparian Assessment that many BMPs have already been established by producers within the watershed. The BMPs included watering facilities developed away from streams (watering troughs and tanks), spring development, heavy use area protection, fencing, and prescribed grazing (shorter duration grazing and moving livestock to prevent overgrazing). With proper installation and maintenance these BMPs can improve water quality and help restore stream function. Most of the riparian areas that were evaluated during the 2003 Upper Owyhee Riparian Assessment displayed an upward trend. This indicates that existing BMPs have already provided water quality improvements on the stream segments with TMDL targets within privately owned parcels.

Problem Statement

On August 8, 1997, the Environmental Protection Agency (EPA) issued a memorandum entitled “New Policies for Establishing and Implementing Total Maximum Daily Loads (TMDLs)” that directed DEQ Regions to work in partnership with States and Tribes to achieve nonpoint source load allocations established for 303(d) listed water bodies. A draft Subbasin Assessment and

TMDL for the Upper Owyhee Watershed was completed by IDEQ and approved by the EPA in March 2003. Pollution load allocations were included for the 303(d) listed stream segments as well as other non-listed stream segments within the Upper Owyhee Watershed and ranged as follows: 87-100 percent shading for temperature; 50 mg/L monthly average and 80 mg/L durational targets for suspended sediment; 25 NTUs target for reservoirs; 27 percent fine material reduction for channel substrate; and stream bank erosion targets ranging from 3.4 to 43.5 tons/mile/year.

Although there are several streams within the Upper Owyhee Watershed on the 303(d) list, the East Fork of the Owyhee River itself is not listed (Table 4.) This indicates that the tributaries to the river are not negatively impacting the water quality in the East Fork of the Owyhee River. Additionally, several of the 303(d) listed stream segments and other segments that received TMDL targets in the Upper Owyhee Watershed are dry throughout most of the year with the exception of spring runoff during parts of May and June. The TMDL process recognizes that the targets and load reductions may be revised as additional data is collected, as understanding of water quality in the Upper Owyhee Watershed improves, and as state water quality standards adapt to reflect new developments.

Table 4. Summary of Water Quality Limited Segments

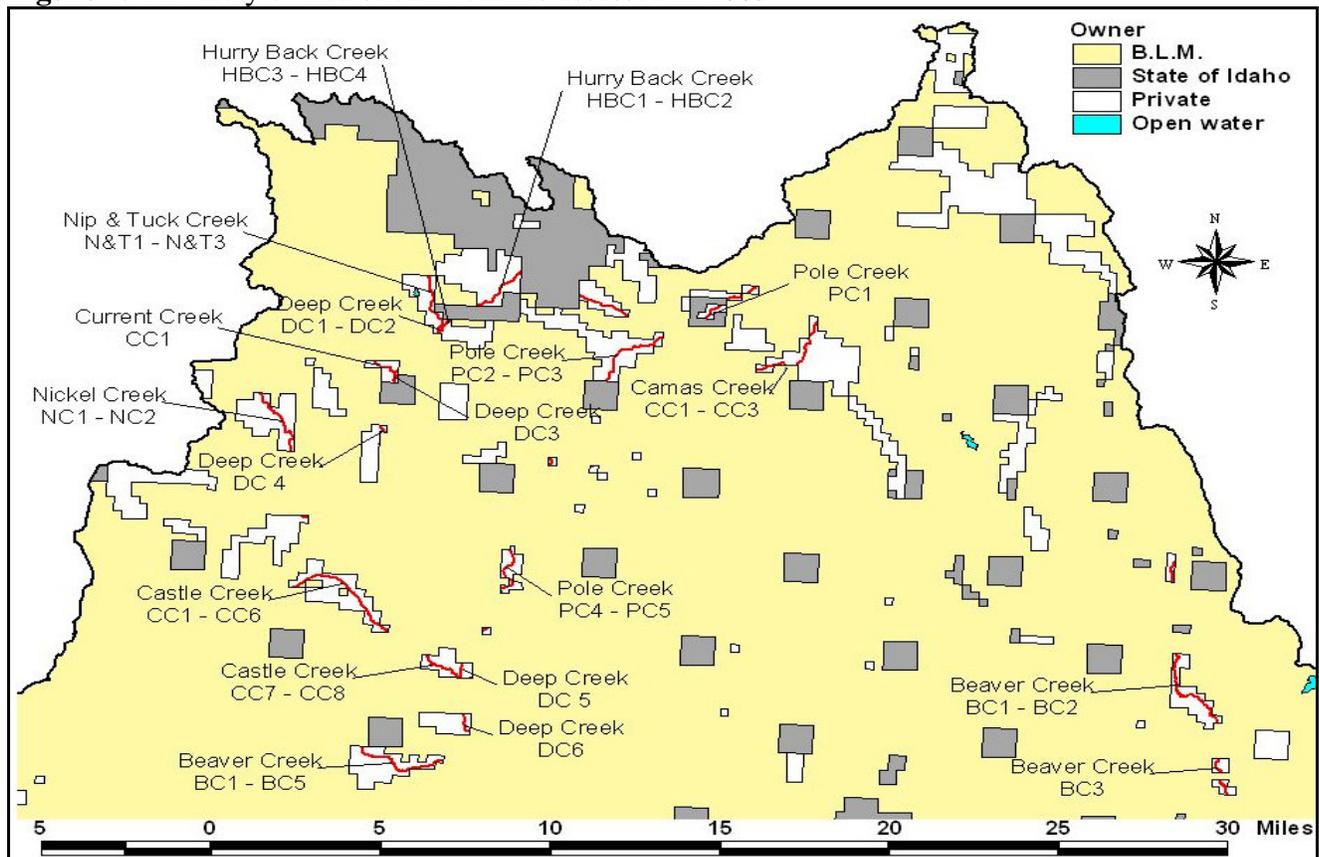
Segment Name	Description	Listed Pollutant(s)	Impaired Beneficial Uses	Area/ Length
Blue Creek Reservoir	Reservoir	Sediment	Cold Water Aquatic Life Salmonid Spawning	185 acres
Juniper Basin Reservoir	Reservoir	Sediment	Cold Water Aquatic Life Salmonid Spawning	750 acres
Deep Creek	Mud Flat Road to EF Owyhee River	Sediment Temperature	Cold Water Aquatic Life Salmonid Spawning	35.0 miles
Pole Creek	Headwaters to Deep Creek	Sediment Temperature Flow	Cold Water Aquatic Life Salmonid Spawning	24.0 miles
Castle Creek	Headwaters to Deep Creek	Sediment Temperature	Cold Water Aquatic Life Salmonid Spawning	11.2 miles
Battle Creek	Headwaters to EF Owyhee River	Bacteria	Primary and Secondary Contact Recreation	62.3 miles
Shoofly Creek	Headwaters to Blue Creek	Bacteria	Primary and Secondary Contact Recreation	22.9 miles
Red Canyon Creek	Headwaters to EF Owyhee River	Sediment Temperature Flow	Cold Water Aquatic Life Salmonid Spawning	5.2 miles
Nickel Creek	Headwaters to Mud Flat Road	Sediment	Cold Water Aquatic Life Salmonid Spawning	2.8 miles

Riparian Assessment

A Riparian Assessment of the Upper Owyhee Watershed was conducted in the summer of 2003 by the Idaho Soil Conservation Commission (ISCC) and the Idaho Association of Soil Conservation

Districts (IASCD). The assessment included an inventory of the privately owned 303(d) listed stream segments as well as unlisted stream segments. The interpretation of data collected and the observations made during the assessment indicates that specific stream reaches need to be addressed through the conservation planning process. Although several BMPs have already been established in various locations throughout the watershed, more BMPs need to be implemented within the specific stream reaches in order to help restore beneficial uses. The BMPs are based on sound conservation management principals that will enhance and maintain healthy riparian communities. In this plan, site-specific areas have been targeted to receive implementation priority over others areas. The stream’s state of transition at the time of BMP implementation will greatly influence the potential success of a given practice.

Figure 4. Privately owned stream reaches assessed in 2003



Based on riparian and stream channel inventories conducted by ISCC and IASCD on the privately owned lands in the Upper Owyhee Watershed, the upland areas above streams have minimal impact on riparian function and stream conditions. The upland area begins at the outside edge of the riparian area along a stream and continues upward to the subwatershed boundary. There was little evidence of excessive erosion or deposition within stream channels from upland areas within each of the evaluated subwatersheds. The primary sources of erosion and deposition are within the stream channel and riparian areas themselves, thus this is where BMP implementation within the privately owned parcels will be focused in order to meet TMDL objectives.

Proper Function Condition (PFC) Assessments, along with other data collection, were completed during the Upper Owyhee Riparian Assessment. As a result, the following criteria for stream reach prioritization was developed by ISCC and IASCD:

1) Reaches that have attained full outward development of their floodplains (no excessive lateral streambank erosion is indicated)

Streams that have well-developed flood plains respond more quickly to grazing management adjustments as they are more stable and allow more riparian vegetation to be established and maintained.

2) Floodplains exist and are inundated with relatively frequent flood events (every 1-2 years)

Some stream reaches will improve more quickly than others due to their current condition and stage of stream development. Stream reaches with well-developed flood plains are higher priority for implementing resource improvements, as they respond quickly to change. Streams must also have relatively frequent flood events in order to establish and maintain the stabilizing riparian plant communities in good vigor across the entire flood plain.

3) A diverse community of riparian-wetland vegetative species exists

Stabilizing vegetation can greatly influence channel shape. Vegetation can decrease channel bankfull widths, creating trapezoid-shaped channels, and ultimately increasing floodplains inwardly. As dish-shaped channels are converted to trapezoid shaped channels, excess fine material trapped within the channel will be scoured out, thus reducing stream embeddedness. If these vegetative species are already found within the reach, improvements may occur rapidly.

4) Adequate soil moisture for riparian-wetland species to exist

Most of these stream reaches are capable of establishing and sustaining woody species (trees and shrubs), but at different rates and quantities. Riparian species in general and specifically woody riparian species are restricted by water availability, elevation to surface, soil type, and availability of parent stock. Healthy riparian-wetland species cannot survive without adequate soil moisture.

Not all of the reaches assessed in 2003 will require management changes to meet TMDL allocations. Six stream reaches assessed were in excellent condition (Camas Creek 2, Castle Creek 4 & 6, Deep Creek 1 & 2, and Pole Creek 2). These reaches are at Proper Functioning Condition (PFC) and will be used as reference reaches for the Upper Owyhee Watershed. Four other reaches were in good condition (Castle Creek 1 & 2 and Deep Creek 5 & 6) and exhibiting an upward trend. As long as they are maintained properly and at current levels, both the “excellent” and “good” condition reaches will not require any additional changes in grazing management practices to help achieve TMDL goals.

Several of the riparian areas on privately owned parcels are in need of site-specific management adjustments, primarily in reference to grazing management. In most cases, riparian improvements can be achieved without the use of structural components such as fencing; however, additional pasture fencing and water developments in these areas would certainly make it easier to control

livestock distribution and grazing intensity. Without the implementation of structural components, more emphasis needs to be placed on proper grazing management. In order to successfully implement effective water quality BMPs on private lands, coordination needs to occur with efforts undertaken by the Idaho Department of Lands and the Bureau of Land Management. By working together on BMP implementation, the designated agencies and owners within the watershed can more effectively address the water quality concerns identified in the TMDL.

Additional Data Collection

Although specific riparian assessments were conducted in 2003 on these TMDL target streams, there is a need for additional in-depth riparian resource inventories in the future. The collection of additional data will occur on the private lands during the development of individual conservation plans. Preferably, this will take place in conjunction with the BLM and State Lands allotment plan renewal period. There is also a specific need to collect vegetative potential data for shading on reaches found to be near or at natural state for the watershed given the current climatic conditions. This additional data collected could then be utilized to define realistic shading targets for individual streams

Critical Areas

In terms of grazing impacts on private land, the riparian areas of concern include parcels on Beaver Creek, Blue Creek, Camas Creek, Castle Creek, Current Creek, Deep Creek, Hurry Back Creek, Nickel Creek, Nip & Tuck Creek, and Pole Creek. The riparian health and stream function impact from livestock grazing varies throughout the watershed according to existing grazing management techniques. Table 5 provides a summary of the assessed stream reaches according to four different categories: riparian/wetland vegetation, lateral stream bank erosion, channel down-cutting, and floodplain development.

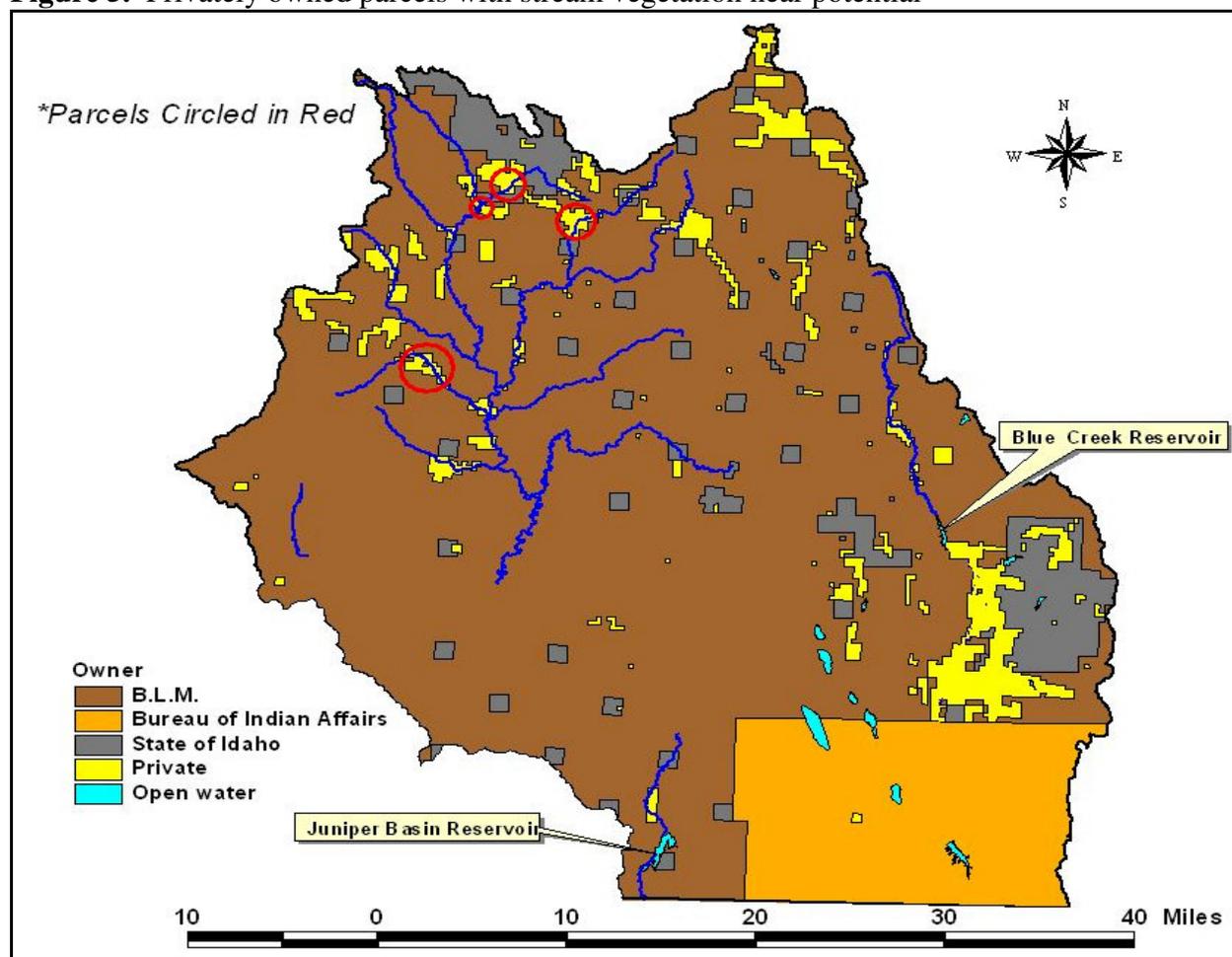
Table 5. Stream Reach Condition Summary

Stream Name	Adequate stabilizing vegetative species present	Excessive lateral streambank erosion	Active & unstable headcuts present	Floodplain development occurring	Rated at Proper Functioning Condition (PFC)	High potential for successful treatment	Low potential for successful treatment
	Stream Reach (es)						
Beaver Creek	N/A	N/A	N/A	BC1 BC2	N/A	BC3 BC5	BC1 BC2 BC4
Blue Creek	N/A	N/A	N/A	BC1 BC2 BC3	N/A	N/A	BC1 BC2 BC3
Camas Creek	CC2	N/A	N/A	N/A	CC2	CC1	CC3
Castle Creek	CC1 CC2 CC4 CC6	CC8	CC2	CC5	CC4 CC6	CC1 CC2 CC3 CC5 CC7 CC8	N/A

Stream Name	Adequate stabilizing vegetative species present	Excessive lateral streambank erosion	Active & unstable headcuts present	Floodplain development occurring	Rated at Proper Functioning Condition (PFC)	High potential for successful treatment	Low potential for successful treatment
	Stream Reach (es)						
Current Creek	N/A	N/A	N/A	CC1	N/A	N/A	CC1
Deep Creek	DC1 DC2 DC5 DC6	N/A	N/A	DC3 DC4	DC1, DC2	DC5 DC6	DC3 DC4
Hurry Back Creek	N/A	HBC2	N/A	N/A	N/A	HBC1 HBC2 HBC3 HBC4	N/A
Nickel Creek	N/A	N/A	NC2	NC2	N/A	NC1	NC2
Nip & Tuck Creek	N/A	N/A	N/A	N&T3	N/A	N&T1 N&T2	N&T3
Pole Creek	PC2	PC1 PC4	N/A	PC3	PC2	PC1 PC4 PC5	PC3

Private Land Priority Treatment Areas

There is adequate floodplain outward development on 73% of the stream reaches assessed. The remaining 27% of the reaches require additional outward floodplain development. In contrast, inward floodplain development is still needed on about 85% of the stream segments assessed. This inward development will decrease the appearance of 'dish shaped' channels and increase 'trapezoid shaped' channels in gravel, sand, and silt/clay dominated streams. Channels dominated by cobble or larger sized material will not likely create a true trapezoid shape due to the inability of vegetation to develop within the substrate itself. The majority of the reaches assessed in 2003 consisted mostly of gravel, sand, and silt material. All of the reaches assessed had gradients (slope) of 2.1% or less while the average gradient for stream reaches assessed was 0.7%. In general, lower gradient streams usually consist of smaller sized material. This was confirmed in the Upper Owyhee Riparian Assessment.

Figure 5. Privately owned parcels with stream vegetation near potential

Most of the stream reaches assessed are capable of establishing and sustaining woody species (trees and shrubs), but at different rates and quantities. Riparian woody species are restricted by water availability, elevation to surface, soil type, and availability of parent stock.

There are “reference” stream reaches within the watershed that do in fact represent good to excellent riparian conditions. These are Camas Creek CC2, Castle Creek CC4 & CC6, Deep Creek DC1 & DC2, and Pole Creek PC2. These reaches closely represent potential riparian stability, vegetation health, and diversity within the stream. Channel diversity, however, is still improving in these reaches. It is not unusual to find a patchwork of vegetation along many of the riparian areas, interrupting a continuous line of vegetation.

To improve stability and shading, the duration of grazing needs to be reduced for the identified segments. Additional watering facilities are needed. More fencing may be needed to increase the number of pastures available for rotation, thus enabling the producer to decrease grazing duration. According to some ranchers in the area, there has already been a change in grazing duration. This has greatly improved stream channel condition and riparian health along several stream reaches. The primary reason to reduce duration and adjust timing is to increase and protect riparian vegetation. Allowing new vegetation growth each year will create multiple age classes, which increases both the quantity and quality of stabilizers along the stream bank and ensures long-term bank stability.

Recommended Conservation Plan Elements

The following three elements are focused on improving and maintaining multiple resources within the riparian areas on privately owned parcels. If properly implemented, these efforts by individual landowners will increase channel stability and shading within the stream segments with TMDL allocation targets. It is unlikely, however, that the shading targets established in the TMDL (87-100%) will be achieved since most stream channels have widths greater than 12 feet. Although there are well-shaded and stable stream reaches with narrow channel widths, good soil, and adequate water supply within the watershed, they are considered rare exceptions. Regardless of TMDL shade targets, riparian stability and species diversity need to be improved by adjusting grazing management strategies on private lands.

Conservation plans will be developed in conjunction with NRCS and local Soil Conservation Districts (Bruneau River Soil Conservation District and/or Owyhee Soil Conservation District)

The nine step NRCS planning criteria will be used to ensure quality design and installation of applicable BMPs. All Endangered Species Act (ESA), Cultural Resources, permit & easement issues will be addressed during the conservation planning process. Conservation plans will be developed with landowners to establish BMPs that will improve and maintain healthy riparian conditions. High priority areas for conservation planning are determined by the stream's current "state of transition" and how effectively a BMP will improve conditions. What works well on one specific stream reach may not work at all in another. There are two actions, however, that should be implemented on all stream reaches if they have not already been implemented: offsite watering facilities and head cut stabilization. These two actions are certain to provide some level of improvement and protection of existing riparian areas and will receive implementation priority during the on-site planning process for each private parcel.

Element #1 - Grazing management components must be included in every Conservation Plan

Properly implemented grazing plans are intended to improve and maintain upland and riparian plant vigor while meeting many of the local resource needs. For riparian plants, increasing bank stability through an increased quantity of stabilizing plants is a high priority. With the exception of bedrock and boulder channel types, channel shape conversion from "dish" to "trapezoid" and "inverse trapezoid" will follow with an increase of bank stability. Where woody vegetative species (primarily shrubs) are capable of reproducing along riparian areas, shading will also increase naturally. Where stream floodplains are wide, stream gradient very low, and silt/clay soils are dominant, shrub species will be limited. Channel shape and over hanging banks will provide the best conditions for maintaining water temperatures in these types of conditions. Temperatures in east/west stream channels will likely differ from north/south flowing streams because of shading effectiveness.

Element #2 - New or additional watering sources for livestock and wildlife use may be needed to reduce grazing intensity on riparian vegetation

By developing watering sources away from streams, grazing intensity on the riparian area is reduced. Riparian fencing may not be necessary or feasible in many of the remote areas of Owyhee

County. If riparian fencing is installed along stream channels, water gaps can be installed for livestock watering with minimal impact to water quality and riparian function.

Element #3 - Existing large pastures may need to be divided into smaller pastures to create an effective grazing rotational system that controls both duration and timing of livestock use

While fencing of specific riparian areas may be recommended, early season grazing of riparian areas can occur if duration is short and ample time is allowed for regrowth. This type of management will ensure healthy root growth of riparian species for the entire season. Fall grazing can occur if livestock do not overly desire protein during this period of time. Protein availability in grasses late in the growing season is very low, while shrub protein is high. Livestock supplements such as protein blocks may overcome excessive utilization of shrubs (willows, dogwood, etc.) in the summer and fall months.

BMP Implementation Costs

The cost list to install BMPs on private agricultural land is available from the Owyhee Soil Conservation District office in Marsing and the Bruneau River Soil Conservation District office in Bruneau. These costs have been developed through actual tracking of average BMP installation costs and are used county-wide to determine allowed contracted costs through the USDA Environmental Quality Incentives Program (EQIP). When there is a large distance between material suppliers and the location of installation, there is a greater overall cost for the BMP as a result of the cost for delivery. Where shallow soils exist, fence building materials (as well as installation costs) may differ greatly from typical costs. Since actual costs to install a BMP may not be known until during (or after) installation, a more accurate watershed-wide budget will be developed during the on-site planning and implementation process. Table 6 provides the typical costs for many of the applicable BMP components for southern Idaho. Labor and equipment costs are not included in this table due to the variation from one site to another.

Table 6. Average Costs of Component Practices Applicable to Owyhee County

Component Practice	Unit of Measure	Cost/Unit
Fence, 4 wire	Feet	\$ 1.15
Fence, 5 wire	Feet	\$ 1.50
Fence, Jack	Feet	\$ 3.70
Prescribed Grazing, Intensive management	Acre	\$ 6.00
Prescribed Grazing, Deferred grazing	Acre	\$ 3.00
Prescribed Grazing, Planned grazing system	Acre	\$ 1.50
Prescribed Grazing, Riparian exclusion	Acre	\$ 10.00
Spring Development	Each	\$2,500.00
Trough or Tank	Each	\$1,600.00
Stream Habitat Improvement and Management	Acre/feet	\$ 250.00
Stream Channel Stabilization	Feet	\$ 30.00
Watering Facility, Float, valves, fittings	Each	\$ 50.00
Watering Facility, Nose pump	Each	\$ 500.00
Watering Facility, Trough or Tank	Each	\$ 775.00

Costs may increase with greater travel distances and accessibility

**Source: NRCS 2002 EQIP Cost List – Average Costs, For Estimates Only

Installation and Financing

Landowners can enter into voluntary water quality contracts with the local Soil Conservation District (SCD) to reduce out of pocket expenses to implement BMPs. The USDA Natural Resources Conservation Service (NRCS), Idaho Soil Conservation Commission (ISCC), and Idaho Association of Soil Conservation Districts (IASCD) are technical agencies that can assist landowners in conservation plan development, BMP design, and identification of funding sources. Each landowner participating in an SCD sponsored program is responsible for installing the BMPs scheduled within their water quality contract (plan of operations). Each participant is also required to make their own arrangements for financing their share of installation costs. Available funding sources for BMP installation are listed in Appendix 1.

Operation, Maintenance, and Replacement

Participants of SCD sponsored programs are required to maintain the BMPs throughout its expected life span. The program contract outlines the landowner's responsibilities regarding operation and maintenance (O&M) for each BMP.

Inspections of installed BMPs are made annually by available technicians within the local SCD, NRCS, IASCD, or ISCC during the contracted period of the water quality/conservation plan. It is intended that the contracted BMPs will become a part of the participant's farming or ranching operation and will continue to be maintained after the water quality contract expires.

Monitoring and Evaluation

Component practice BMP evaluation is done in conjunction with conservation plan and program contract implementation. The objective of an individual conservation plan evaluation is to verify that BMPs are properly installed, maintained, and working as designed. An October 2003 publication by ISCC and IDEQ entitled *Idaho Agricultural Best Management Practices: A Field Guide for Evaluating BMP Effectiveness* provides the specifications and protocol for BMP evaluation to be used by field staff. Monitoring for pollutant reductions from individual projects consists of spot checks, annual reviews, and evaluation of advancement toward reduction goals. The results of these evaluations are used to recommend any necessary adjustments to continue meeting resource objectives. Annual status reviews are typically done within program contracts to ensure compliance with contract rules.

Where conservation plans are developed in cooperation with an SCD progress is tracked during the life of a program contract. Local tracking is assisted by NRCS and ISCC agency program specialists, where cost-share programs/projects are active. Where cost-share programs are not used, tracking is up to the local SCD or NRCS field offices.

Additionally, "reference reach" transects will be established on multiple stream segments within the watershed to determine potential and capability for shading of stream channels. Once BMPs are established on other stream reaches, tracking of progress toward "reference reach" status will be monitored and evaluated. Adjustments to implementation strategies will be adjusted as necessary to maximize effectiveness of implemented BMPs.

Tasks for Privately Owned Parcels

Task 1: Develop conservation plans with private agricultural landowners.

Responsible Agency: IASCD (support from NRCS, ISCC, IDL, and BLM)

Timeline: Immediately

Task 2: Assist private agricultural landowners to implement conservation plan components.

Responsible Agency: IASCD (support from NRCS, ISCC, IDL, and BLM)

Timeline: Ongoing

Task 3: Monitor conservation implementation progress and evaluate effect on vegetation and channel shape.

Responsible Agency: IASCD (support from NRCS, ISCC, IDL, and BLM)

Timeline: Ongoing

Task 4: Install “reference reach” transects to define potential and capability of shading of stream channels.

Responsible Agency: ISCC (support from IASCD, NRCS, IDL, and BLM)

Timeline: Summer of 2005

Glossary of Terms and Acronyms

Aquifer - A water-bearing bed or stratum of permeable rock, sand, or gravel capable of yielding considerable quantities of water to wells or springs.

Antidegradation - A Federal regulation requiring the States to protect high quality waters. Water Quality Standards may be lowered to allow important social or economic development only after adequate public participation. In all instances, the existing beneficial uses must be maintained.

Aquatic - Growing, living, or frequenting water.

Assimilative Capacity - An estimate of the amount of pollutants that can be discharged to a water body and still meet the state water quality standards. It is the equivalent of the Loading Capacity, which is the equivalent of the TMDL for the water body.

Bedload - Sand, silt, gravel, or soil and rock detritus carried by a stream on or immediately above (3") its bed.

Beneficial Use - Any of the various uses which may be made of the water of an area, including, but not limited to, domestic water supplies, industrial water supplies, agricultural water supplies, navigation, recreation in and on the water, wildlife habitat, and aesthetics.

Best Management Practice (BMP) - A measure determined to be the most effective, practical means of preventing or reducing pollution inputs from point or nonpoint sources in order to achieve water quality goals.

Biomass - The weight of biological matter. Standing crop is the amount of biomass (e.g., fish or algae) in a body of water at a given time. Often measured in terms of grams per square meter of surface.

Biota - All plant and animal species occurring in a specified area.

Coliform bacteria - A group of bacteria predominantly inhabiting the intestines of man and animal but also found in soil. While harmless themselves, coliform bacteria are commonly used as indicators of the possible presence of pathogenic organisms.

Critical Areas - Areas identified by the commission based on recommendations from local entities producing significant nonpoint source pollution impacts or areas deemed necessary for protection or improvement for the attainment or support of beneficial uses.

Designated Beneficial Use or Designated Use - Those beneficial uses assigned to identified waters in Idaho Department of Health and Welfare Rules, Title 1, Chapter 2, "Water Quality Standards and Wastewater Treatment Requirements":, Sections 110. through 160. and 299., whether or not the uses are being attained.

Erosion - The wearing away of areas of the earth's surface by water, wind, ice, and other forces.

Existing Beneficial Use or Existing Use - Those beneficial uses actually attained in waters on or after November 28, 1975, whether or not they are designated for those waters in Idaho Water Quality Standards and Wastewater Treatment Requirements (IDAPA 58).

Exotic Species - Non-native or introduced species.

Feedback Loop - A component of a watershed management plan strategy that provides for accountability on targeted watershed goals.

Flow - The water that passes a given point in some time increment.

Groundwater - Water found beneath the soil's surface; saturates the stratum at which it is located; often connected to surface water.

Habitat - A specific type of place that is occupied by an organism, a population or a community.

Headwater - The origin or beginning of a stream.

Hydrologic basin - The area of land drained by a river system, a reach of a river and its tributaries in that reach, a closed basin, or a group of streams forming a drainage area. There are six basins described in the Nutrient Management Act (NMA) for Idaho -- Panhandle, Clearwater, Salmon, Southwest, Upper Snake, and the Bear Basins.

Hydrologic cycle - The circular flow or cycling of water from the atmosphere to the earth (precipitation) and back to the atmosphere (evaporation and plant transpiration). Runoff, surface water, groundwater, and water infiltrated in soils are all part of the hydrologic cycle.

Intermittent Waters – A stream, reach, or waterbody which has a period of zero (0) flow for at least one (1) week during most years. Where flow records are available, a stream with a 7Q2 hydrologically-based flow of less than one-tenth (0.1) cfs is considered intermittent. Streams with natural perennial pools containing significant aquatic life uses are not intermittent.

Irrigation Water Management (IWM) - IWM involves providing the correct amount of water at the right times to optimize crop yields, while at the same time protecting the environment from excess surface runoff. Irrigation water management includes techniques to manage irrigation system hardware for peak uniformity and efficiency as well as irrigation scheduling and soil moisture-monitoring methods.

LA - Load Allocation for nonpoint sources.

Limiting - A chemical or physical condition that determines the growth potential of an organism, can result in less than maximum or complete inhibition of growth, typically results in less than maximum growth rates.

Load Allocation - The amount of pollutant that nonpoint sources can release to a water body.

Loading - The quantity of a substance entering a receiving stream, usually expressed in pounds (kilograms) per day or tons per month. Loading is calculated from flow (discharge) and concentration.

Loading Capacity - A mechanism for determining how much pollutant a water body can safely assimilate without violating state water quality standards. It is also the equivalent of a TMDL.

Macro invertebrates - Aquatic insects, worms, clams, snails, and other animals visible without aid of a microscope, that may be associated with or live on substrates such as sediments and macrophytes. They supply a major portion of fish diets and consume detritus and algae.

Macrophytes - Rooted and floating aquatic plants, commonly referred to as water weeds. These plants may flower and bear seed. Some forms, such as duckweed and coontail (*Ceratophyllum*), are free-floating forms without roots in the sediment.

Margin of safety (MOS) - An implicit or explicit component of water quality modeling that accounts for the uncertainty about the relationship between the pollutant loads and the quality of the receiving water body. This accounts for any lack of knowledge concerning the relationship between pollutant loads and the water quality of the receiving water body. It is a required component of a TMDL and is normally incorporated into the conservative assumptions used to develop the TMDL (generally within the calculations or models) and is approved by the EPA either individually or in State/EPA agreements. Thus, the $TMDL = LC = WLA + LA + MOS$.

National Pollution Discharge Elimination System (NPDES) - A national program from the Clean Water Act for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcement permits, and imposing and enforcing pretreatment requirements.

Nonpoint Source - A geographical area on which pollutants are deposited or dissolved or suspended in water applied to or incident on that area, the resultant mixture being discharged into the waters of the state. Nonpoint source activities include, but are not limited to irrigated and nonirrigated lands used for grazing, crop production and silviculture; log storage or rafting; construction sites; recreation sites; and septic tank disposal fields.

Participant - Individual agricultural owner, operator, partnership, private corporation, conservation district, irrigation district, canal company, or other agricultural or grazing interest approved by the commission for cost-sharing in an eligible project area; or an individual agriculture owner or operator, partnership, or private corporation approved by a project sponsor in an eligible project area.

Project Sponsor - A conservation district, irrigation district, canal company or other agriculture or grazing interest as determined appropriate by the commission that enters into a water quality project agreement with the commission.

Reach - A continuous unbroken stretch of river.

Riparian vegetation - Vegetation that is associated with aquatic (streams, rivers, lakes) habitats.

Runoff - The portion of rainfall, melted snow, or irrigation water that flows across the surface or through underground zones and eventually runs into streams.

Sediment - Bottom material in a body of water that has been deposited after the formation of the basin. It originates from remains of aquatic organism, chemical precipitation of dissolved minerals, and erosion of surrounding lands.

Sub-watershed - Smaller geographic management areas within a watershed delineated for purposes of addressing site specific situations.

Threatened species - A species, determined by the U.S. Fish and Wildlife Service, which are likely to become endangered within the foreseeable future throughout all or a significant portion of their range.

TMDL - Total Maximum Daily Load. $TMDL = LA + WLA + MOS$. A TMDL is the equivalent of the Loading Capacity which is the equivalent of the assimilative capacity of a water body.

Total Suspended Solids (TSS) - The material retained on a 45 micron filter after filtration

Tributary - A stream feeding into a larger stream or lake.

Waste Load Allocation - The portion of receiving water's loading capacity that is allocated to one of its existing or further point sources of pollution. It specifies how much pollutant each point source can release to a water body.

Water Pollution - Any alteration of the physical, thermal, chemical, biological, or radioactive properties of any waters of the state, or the discharge of any pollutant into the waters of the state, which will or is likely to create a nuisance or to render such waters harmful, detrimental or injurious to public health, safety or welfare, or to fish and wildlife, or to domestic, commercial, industrial, recreational, aesthetic, or other beneficial uses.

Water Quality Contract - The legal document executed by the commission or the project sponsor identifying terms and conditions between the commission or the project sponsor and an individual cost-share participant.

Water Quality Management Plan - A state- or area-wide waste treatment plan developed and updated in accordance with the provisions of the Clean Water Act.

Water Quality Limited Segment (WQLS) - Any segment where it is known that water quality does not meet applicable water quality standards and/or is not expected to meet applicable water quality standards.

Water Quality Plan - The plan developed cooperatively by the participant, technical agency and the commission or project sponsor which identifies the critical areas and nonpoint sources of water pollution on the participant's operation and sets forth BMPs that may reduce water quality pollution from these critical areas and sources.

Water table - The upper surface of groundwater; below this point, the soil is saturated with water.

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Watershed - A drainage area or basin in which all land and water areas drain or flow toward a central collector such as a stream, river, or lake at a lower elevation. The whole geographic region contributing to a water body.

WLA - Wasteload Allocation for point sources.

Useful Conversion Factors

1 meter = 3.821 feet

1 hectare = 0.4047 acre

$^{\circ}\text{C} = (^{\circ}\text{F} - 32)/1.8$

Appendices

Appendix 1 – Funding Sources

BMP Funding Sources

Funding of Best Management Practices - *Search for Many Funding Sources Using Boise State University Environmental Finance Center:* <http://ssrc.boisestate.edu>

Costs estimates relative to each of the designated agency responsibilities need to be estimated as individual water quality plans for private agricultural lands, grazing management plans for state lands, or water quality restoration plans for federal land. As always, funding issues and the availability of funding to implement best management practices is of concern. Much of the available funds that can be used to implement this plan are available annually on a first-come first-serve basis or through a competitive review and ranking process. The Boise State University Environmental Finance Center is a valuable resource for anyone interested in obtaining funding for projects. Chapter Four of the Idaho Nonpoint Source Management Plan (IDEQ, 1999) also contains a substantial listing of available funding sources and cooperating agencies for use in the implementation of best management practices and includes several of the programs which could be used as implementation funding sources.

§104(b)(3)...Tribal and State Wetland Protection Grant, EPA
<http://yosemite.epa.gov/R10/HOMEPAGE.NSF/webpage/Grants>

This program provides financial assistance to state, tribal, and local government agencies to develop new wetland protection programs or refine and improve existing programs. All projects must clearly demonstrate a direct link to improving an applicant's ability to protect, restore or manage its wetland resources.

§319 (h)...Nonpoint Source Grants, EPA/IDEQ
http://www.deq.state.id.us/water/water1.htm#ww_nonpoint

This program provides financial assistance for the implementation of best management practices to abate nonpoint source pollution. The IDEQ manages the NPS program. All projects must demonstrate the applicant's ability to abate NPS pollution through the implementation of BMPs.

Aquatic Ecosystem Restoration, CoE
<http://www.nab.usace.army.mil/whatwedo/civwks/CAP/206.pdf>

Section 206 of the Water Resources Development Act of 1996 provides financial assistance for aquatic and associated riparian and wetland ecosystem restoration and protection projects that will improve the quality of the environment. There is no requirement for an aquatic ecosystem project to be linked to a Corp of Engineers project. The program does require that a non-federal interest provide 35% of construction costs, including all lands, easements, right-of-ways and necessary relocations. The program also requires that 100% of the operation, maintenance, replacement, and rehabilitation be borne by the non-federal interest. The program limits the amount of federal assistance to \$5 million for any single project.

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Challenge Cost-share Program, BLM

<http://www.dfw.state.or.us/ODFWhtml/VolunteerProg/STEP.html>

This program provides 50% cost-share monies on fish, wildlife, and riparian enhancement projects to non-federal entities.

Conservation Operations Program (CO-01), NRCS

<http://www.id.nrcs.usda.gov/programs/financial.html>

The CO-01 program provides technical assistance to individuals and groups of landowners for the purpose of establishing a link between water quality and the implementation of conservation practices. The NRCS technical assistance provides farmers and ranchers with information and detailed plans necessary to conserve their natural resources and improve water quality.

Conservation Research and Education, NRCS

<http://www.id.nrcs.usda.gov/programs/financial.html>

The Conservation Research and Education program was created through the 1996 Farm Bill and is administered by the National Natural Resources Conservation Foundation. The purpose of the program is to fund research and educational activities related to conservation on private lands through public-private partnerships.

Conservation Reserve Program (CRP), NRCS

<http://www.id.nrcs.usda.gov/programs/financial.html>

The CRP program provides a financial incentive to landowners for the protection of highly erodible and environmentally sensitive lands with grass, trees, and other long-term cover. This program is designed to remove those lands from agricultural tillage and return them to a more stable cover. This program holds promise for nonpoint source control since its aim is highly erodible lands.

Conservation Technical Assistance (CTA), NRCS

<http://www.id.nrcs.usda.gov/programs/financial.html>

Technical assistance for the application of BMPs is provided to cooperators of soil conservation districts by the NRCS. Preparation and application of conservation plans is the main form of technical assistance. Assistance can include the interpretation of soil, plant, water, and other physical conditions needed to determine the proper BMPs. The CTA program also provides financial assistance in implementing BMPs described in the conservation plan.

Environmental Quality Incentives Program (EQIP), NRCS

<http://www.id.nrcs.usda.gov/programs/financial.html>

EQIP is a program based on the 1996 Farm Bill legislation and combines the functions of the Agricultural Conservation Program, Water Quality Incentives Programs, Great Plains Conservation Program, and the Colorado River Basin Salinity Control Program. EQIP offers technical assistance and cost share monies to landowners for the establishment of a five to ten year conservation agreement activities such as manure management, pest management, and erosion control. This program gives special consideration to contracts in those areas where agricultural improvements will help meet water quality objectives.

Environmental Restoration, CoE

<http://www.usace.army.mil>

Section 1135 of the Water Resources Development Act of 1986 provides for modifying the structure, operation, or connected influences or impacts from a Corp of Engineer project to restore

fish and wildlife habitat. The project must result in the implementation or change from existing conditions and the project benefits must be associated primarily with restoring historic fish and wildlife resources. Though recreation cannot be the primary reason for the modification, an increase in recreation may be one measure of value in the improvement to fish and wildlife resources. The program requires a non-federal sponsor, which can include public agencies, private interest groups, and large national nonprofit organizations such as Ducks Unlimited or the Nature Conservancy. Operation and maintenance associated with the project modifications are the responsibility of the non-federal sponsor. Planning studies, detailed design, and construction are cost shared at a 75% federal and 25% non-federal rate. No more than \$5 million in federal funds may be spent at a single location.

Farm Services Agency Direct Loan Program, FSA

<http://www.fsa.usda.gov/pas/default.asp>

This program provides loans to farmers and ranchers who are unable to obtain financing from commercial credit sources. Loans from this program can be used to purchase or improve pollution abatement structures.

Hydrologic Unit Areas (HUAs), NRCS

<http://www.id.nrcs.usda.gov/programs/financial.html>

The NRCS is responsible for the HUA water quality projects. The purpose of these projects is to accelerate technical and cost-share assistance to farmers and ranchers in addressing agricultural nonpoint source pollution.

Idaho Water Resources Board Financial Programs, IDWR

<http://www.idwr.state.id.us/waterboard/financial.htm>

The Idaho Water Resources Board Financial Program assists local governments, water and homeowner associations, non-profit water companies, and canal and irrigation companies with funding for water system infrastructure projects. The various types of projects that can be funded include: public drinking water systems, irrigation systems, drainage or flood control, ground water recharge, and water project engineering, planning and design. Funds are made available through loans, grants, bonds, and a revolving development account.

National Conservation Buffer Initiative, NRCS

<http://www.id.nrcs.usda.gov/programs/financial.html>

The National Conservation Buffer Initiative program provides cost-share funds in an effort to use grasses and trees as conservation buffers to protect and enhance riparian resources on farms. This program will be an integral part of TMDL/WRAS implementation planning to ensure land management practices are moved away from streams and riparian areas.

Planning Assistance, CoE

<http://www.usace.army.mil>

Section 22 of the Water Resources Development Act of 1974 authorizes the Corp of Engineers to assist local governments and agencies, including Indian Tribes, in preparing comprehensive plans for the development, utilization, and conservation of water and related resources. Total costs for projects cannot exceed \$1 million in a single year and are cost-shared at a 50% federal and 50% non-federal rate.

Range Improvement Fund - 8100, BLM

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<http://www.id.blm.gov>

This program focuses on improving rangeland management conditions, including the implementation of best management practices. A portion of the money to operate the program comes from the grazing fees paid by permittees.

Small Watersheds (PL-566), NRCS

<http://www.id.nrcs.usda.gov/programs/financial.html>

The Small Watersheds program authorizes the NRCS to cooperate in planning and implementing efforts to improve soil and water conservation. The program provides for technical and financial assistance for water quality improvement projects, upstream flood control projects, and water conservation projects.

Partners for Wildlife (Partners), USFWS

<http://partners.fws.gov>

The Partners for Wildlife program is implemented by the U.S. Fish and Wildlife Service and designed to restore and enhance fish and wildlife habitat on private lands through public/private partnerships. Emphasis is on restoration of riparian areas, wetlands, and native plant communities.

Pheasants Forever

<http://www.pheasantsforever.org>

Pheasants Forever can provide up to 100 percent cost-share for pheasant and other upland game projects which establish, maintain, or enhance wildlife habitat.

Resource Conservation and Development (RC&D), NRCS

<http://www.id.nrcs.usda.gov/programs/financial.html>

Through locally sponsored areas, the RC&D program assists communities with economic opportunities through the wise use and development of natural resources by providing technical and financial assistance. Program assistance is available to address problems including water management for conservation, utilization and quality, and water quality through the control of nonpoint source pollution.

Resource Conservation and Rangeland Development Program (RCRDP), SCC

<http://www.scc.state.id.us/loans.htm>

The RCRDP program provides grants for the improvement of rangeland and riparian areas, and loans for the development and implementation of conservation improvements.

State Revolving Fund (SRF), IDEQ

<http://www.deq.state.id.us/water/water1.htm#funding>

The IDEQ Grant and Loan Program administers the State Revolving Fund. The purpose of the program is to provide a perpetually revolving source of low interest loans to municipalities for design and construction of sewage collection and treatment facilities to correct public health hazards or abate pollution. State Revolving Loan funds are also used to support the Source Water Assessment Program and Nonpoint Source. The Grant and Loan Program uses a priority rating form to rank all projects primarily on the basis of public health, compliance, and affordability. Additional points are awarded to projects that have completed a source water assessment and are maintaining a protection area around their source.

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Stewardship Incentives Program (SIP), IDL

<http://www2.state.id.us/lands/Forest%20Legacy/Assessment%20of%20Need%20Breakout%20Files/8-Existing%20Conservation%20Efforts.pdf>

SIP provides technical and financial assistance to encourage non-industrial private landowners to keep their lands and natural resources productive and healthy. Qualifying land includes rural lands with existing tree cover or land suitable for growing trees. Eligible landowners must have an approved Forest Stewardship Plan and own less than 1,000 acres.

Water Quality Program for Agriculture (WQPA), ISCC

<http://www.scc.state.id.us/docs/wqpafs.doc>

Provides financial incentives to owners and operators of agricultural lands to apply conservation practices to protect and enhance water quality and fish and wildlife habitat.

Wetlands Reserve Program (WRP), NRCS

<http://www.id.nrcs.usda.gov/programs/financial.html>

WRP was established to help landowners work toward the goal of "no net loss" of wetlands. This program provides landowners the opportunity to establish 30-year or permanent conservation easements, and cost-share agreements for landowners willing to provide wetlands restoration.

Wildlife Habitat Incentive Program (WHIP), NRCS

<http://www.id.nrcs.usda.gov/programs/financial.html>

WHIP was established to help landowners improve habitat on private lands by providing cost-share monies for upland wildlife, wetland wildlife, endangered species, fisheries, and other wildlife. Additionally, cost share agreements developed under WHIP require a minimum 10-year contract.

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Upper Owyhee Implementation Plan for Public Lands



Upper Owyhee River

PUBLIC LANDS IMPLEMENTATION

Goals and Objectives for Federal Lands

To comply with the Clean Water Act and protect and enhance the quality of the surface and ground water in the Upper Owyhee watershed, BLM is responsible for developing range management plans that authorize livestock grazing on Federal lands while meeting State Water Quality Standards criteria in the subbasin.

Federal grazing regulations require that the BLM determine if grazing related management practices are achieving Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing (USDI 1997) or are making significant progress toward their achievement and conform with the Guidelines for Livestock Grazing Management (Code of Federal Regulations, Section 4180). Standards for Rangeland Health for Idaho include a standard for Water Quality (Standard 7), which states surface and ground water on public lands comply with the State of Idaho Water Quality Standards and Wastewater Treatment Requirements (IDEQ 1996a). BLM policy states that assessments for standards of rangeland health (Assessments) will be completed for all grazing allotments on Federal lands over the next 4 years.

BLM authorizes livestock grazing on Federal lands encompassing 22 grazing allotments that comprise 74% of the Upper Owyhee River watershed (Table 1). Seven large grazing allotments (Big Springs, Riddle, Garat, Nickel Creek, Castlehead/Lambert, Northwest, and Battle Creek allotments) ranging in size from 35,000 to 187,000 acres comprise the majority of the federal land in the watershed (Figure 1). Twelve of the grazing allotments encompass federal lands with 303(d) listed stream segments (Table 1). BLM authorized livestock grazing of federal lands may potentially be impacting these water-quality impaired stream segments.

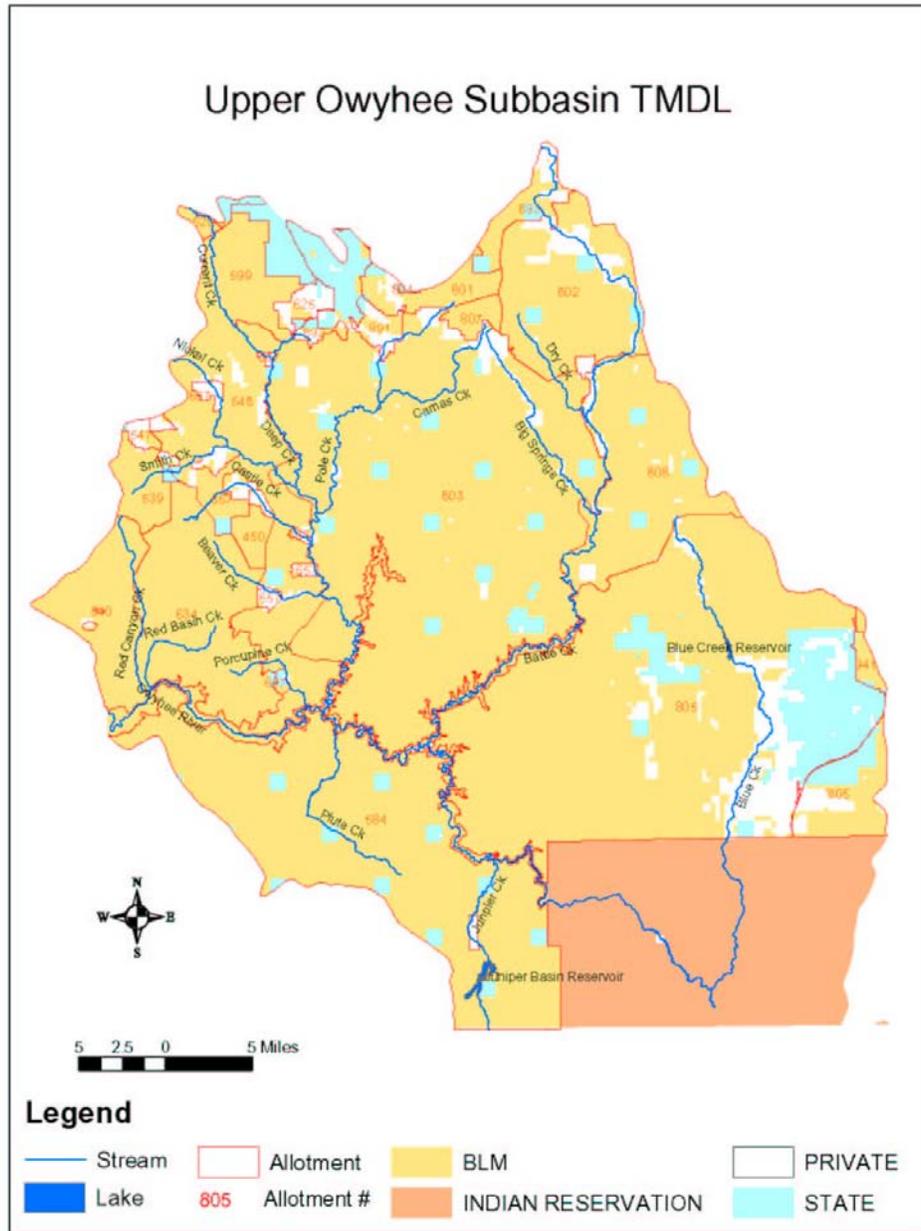
Assessments for Standards of Rangeland Health are scheduled to be completed by 2007 for all Federal-grazing allotments within the Upper Owyhee River subbasin. The Assessments will include evaluations of current water quality conditions and compliance with State of Idaho water quality criteria. Grazing on BLM allotments will be revised based on the findings of the Rangeland Health Assessments. Environmental Assessments (EAs) (USDI 2003a, 2003b) are then prepared that analyze alternatives to modifying the grazing permits. These EAs will include Water Quality Restoration Plans (WQRP) that outline Best Management Practices used to address nonpoint source pollution. The WQRPs also specify monitoring that will be conducted to evaluate the effectiveness of prescribed BMPs in improving water quality. Any changes to range management on allotments in the subbasin (ie. implementation of BMPs) will be formalized through the issuance of proposed and final decisions that modify the existing permits authorizing livestock grazing on Federal lands.

BMPs and/or component practices that typically have been applied to address impacts to water quality resulting from BLM authorized livestock grazing include, but are not limited to:

- Development of offsite water;
- Limiting of livestock utilization of streamside and floodplain vegetation;
- Fencing to modify or exclude livestock use of riparian and aquatic habitats;
- Development of detailed range management plans that change seasons of use, or
- Prescribed rest or deferment for pastures that contains riparian/aquatic habitat (ISCC and IDEQ

1991).

In general, emphasis is placed on range management plans that modify grazing practices to conform to Guidelines for Livestock Grazing Management, while not requiring large expenditures on projects such as fencing, and/or water developments. The extensive amount of stream mileage and rugged terrain where these allotments are located may make certain projects cost prohibitive.



BLM – Figure 1-Upper Owyhee-TMDL

Figure 1. Locations of grazing allotments in the Upper Owyhee Watershed where the U.S. Bureau of Land Management authorizes livestock grazing. Reference Table 1 for Allotment names associated with the allotment numbers displayed on the map.

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Table 1. Grazing allotments in the Upper Owyhee River Subbasin where BLM authorizes livestock grazing and scheduled date for completion of Assessment for Standards of Rangeland Health.

Allotment Number	Federal Land Acreage¹	Upper Owyhee 303(d) Streams on Allotment	Year Assessed or Scheduled for Assessment
0802	34,735	Battle Cr	1998
0808	41,124	Battle Cr	1999
0599	13,800	none	2000
0625	725	none	2000
0539	8,146	none	2000
0540	22,726	Red Canyon Cr	2001
0623	116	none	2001
0547	534	none	2001
0520	1,352	None	2002
0634	46,106	Red Canyon Cr	2003
0548	67,604	Deep, Castle Cr	2003
0657	1,591	Deep, Castle Cr	2003
0584	115,420	Juniper Basin Rsvr	2004
0803	187,264	Battle, Deep, Pole Cr	2005
0807	3,630	none	2005
0450	3,694	Castle Cr	2005
0805	167,124	Shoofly, Blue Cr Rsvr	2006
0891	1,508	Pole Cr	2007
0941	1,853	none	2007
0801	6,990	none	2007
0893	4,940	Battle Cr	2007
0892	687	none	2007

¹Of the portion of the allotment located within the Upper Owyhee Watershed.

An additional management constraint is that portions of the subbasin encompass Wilderness Study Areas, which can limit the type and extent of management projects on Federal lands.

Recent examples of grazing management plans written by BLM to address water quality concerns in the upper Owyhee Watershed include the issuance of the Nickel Creek Allotment Grazing Permit (Environmental Assessment [EA] No. ID-096-2003-051) and the Castlehead-Lambert Allotment Grazing Permit (EA No. ID-096-2004-018). Both of these Environmental Assessments include detailed Water Quality Restoration Plans (USDI 2003a, 2003b) for addressing non-point source pollution impacts resulting from BLM authorized livestock grazing. These allotments are both entirely located within the Upper Owyhee Watershed.

As part of grazing allotment Assessments, BLM also inventories streams and watersheds for activities other than livestock grazing that may be impacting water quality such as poorly located or constructed roads, and unauthorized off-road vehicle use. These impacts are minimally identified in the Assessment, and BLM implements restoration actions to address these impacts where possible. BLM implemented several stream channel restoration projects in the upper Battle Creek watershed that were identified as needed during the Battle Creek Allotment grazing Assessment (USDI 1999a). Some of the impacts from off-road vehicle use are difficult to address with current funding and staffing levels, but BLM anticipates additional resources will become available as part of Access Management Plans that are being developed as part of the implementation of the Owyhee Resource Area Management Plan (USDI 1999b) and of the Bruneau Resource Area Management Plan currently in preparation.

Monitoring Plan

Water Quality Restoration Plans prepared as part of the issuance of each grazing permit include monitoring plans for evaluating the success of management actions in improving water quality of listed §303(d) streams. As part of the best management practice's feedback-loop process, stream temperatures will be monitored at 5-year intervals, or as deemed necessary, to evaluate changes in water temperature with improved stream shading and channel morphology.

The BLM will also conduct greenline plant community composition studies to evaluate the change in the plant community composition along the greenline of the stream. The greenline is the first continuous band of perennial vegetation located up from the stable low water level of the stream (Cowley 1992). Greenline plant community composition and cover will be monitored every 5 years to evaluate the trend in streamside vegetation. Trend photographs will also be taken periodically at greenline monitoring sites. Bacteria levels (*E. coli* concentrations) will be monitored periodically to evaluate changes in bacteria levels with improved streambank and channel conditions (resulting in reduced sediment and bacteria inputs).

Those interested in examining monitoring data collected on streams listed in BLM Water Quality Restoration Plans can contact the BLM Owyhee Field Office to review or obtain copies of the monitoring information (<http://www.id.blm.gov/offices/owhyee/index.htm>). Increases in the density and cover of riparian vegetation on streambanks are the first indicators that revised grazing practices are resulting in progress towards water quality goals. An example of this are photos of Big Jacks Creek (Figures 2a and 2b) taken in 1996 and 2003 that show increased riparian shrub

cover as the result of grazing practices implemented as part of the Northwest Allotment grazing decision and associated WQRP (USDI 2000). Season of grazing use was changed from summer-long use to spring grazing on this segment of Big Jacks Creek to improve quality of water delivered to Jacks Creek, which is a 303(d) listed stream. These photos also show the potential of most streams in the Upper Owyhee watershed to support dense willow-dominated riparian plant communities and meet objectives for stream shade identified in the Upper Owyhee TMDL (DEQ 2003).

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BLM – Figure 2

Figure 2. Increase in riparian shrub cover and stream shade from 1996 (a) to 2003 (b) on Big Jacks Creek in the Northwest allotment. Livestock grazing was changed from summer grazing to spring (June) grazing in 1997. Note the distinctive rock cliff notch (A), lichen-covered cliff wall (B), and cliff breaks (C) in the background of the photographs (the angle of the photos differ slightly because shrub growth on the right side of the stream completely obscured the original view by 2003).

If it is found through monitoring that water quality standards cannot be or are not met on certain stream segments, then site-specific water quality standards may need to be developed as set forth in the Idaho Water Quality Standards and Wastewater Treatment Requirements (IDAPA 58.01.02.275.01).

Federal Land Management - Tasks

Task 1: Complete Allotment Assessments for grazing allotments located in the Upper Owyhee watershed on or before the schedule developed to comply with the BLM policy and regulations (see Table 15).

Milestones: 1998-2000 – completed 5 Assessments
2001-2003 – completed 7 Assessments
December 2005 – complete 4 additional Assessments
December 2007 – complete remaining 6 Assessments

Responsible Agency: U.S. Bureau of Land Management

Task 2: Prepare Water Quality Restoration Plans for §303(d) listed streams on all grazing allotments within the Upper Owyhee watershed

Milestones: Same type date and targets as above

Responsible Agency: U.S. Bureau of Land Management

Task 3. Issue new grazing permits that include Best Management Practices (BMPs) identified to improve/restore water quality of streams within grazing allotments where BLM authorizes livestock grazing on public lands

Milestones: Same as above

Responsible Agency: U.S. Bureau of Land Management

Task 4. Monitor livestock use levels of riparian herbaceous vegetation and woody shrubs on §303(d) listed streams on public lands where BLM authorizes livestock grazing

Milestones: Annually to biannually, generally at the end of the grazing or growing season

Responsible Agency: U.S. Bureau of Land Management

Task 5. Monitor effectiveness of Best Management Practices (BMPs) implemented to improve/restore water quality of §303(d) listed streams on public lands managed by BLM.

Milestones: Every 5 years following the issuance of new grazing permits that include BMPs examine trend in streamside plant community composition, and plant density and vigor

Responsible Agency: U.S. Bureau of Land Management

Task 6. Evaluate compliance with State of Idaho Water Quality Criteria in streams on public lands where BLM authorizes livestock grazing

Milestones: Minimally every 5 years, or more often as deemed necessary

Responsible Agency: U.S. Bureau of Land Management, Idaho Division of Environmental Quality

Funding Opportunities

Monitoring and restoration actions taken to improve water quality on federal lands managed by BLM are conducted with funding appropriated by congress to the BLM to manage public lands in accordance with the Federal Land Policy and Management Act of 1976. BLM can apply for additional funding such as that from Clean Water Grants. However, opportunities to obtain additional funding in the form of grants for the restoration or improvement of water quality on federal lands are limited because BLM must have a non-federal partner to qualify for those grants.

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because shrub growth on the right side of the stream completely obscured the original view by 2003).

Goals and Objectives for State Endowment Lands

To protect and enhance both the quality of the surface and ground water in the Upper Owyhee Watershed Subbasin by developing detailed grazing management plans to meet State Water Quality Standards. State Endowment Lands are administered to maximize revenues overtime to the State Endowment Fund. This is done through consistent sound long-term management practices to maintain or improve the resource. The Idaho Department of Lands (IDL) is responsible for developing detailed grazing management plans that address water quality issues on State Endowment Lands, which will provide for the protection and restoration of beneficial uses and meet State Water Quality Standards.

State Land Tasks

Task 1: Prepare or revise grazing management plans on State Allotments so that water quality standards will be met within a reasonable length of time.

Milestones: Every 4-10 years when the lease comes up for renewal.

Responsible Agency: Idaho Department of Lands

Task 2: Implement grazing management plans on State grazing allotments

Milestones: Annually on blocks.

Responsible Agency: Idaho Department of Lands

Task 3: Monitor and review of state grazing leases

Milestones: Annually on blocks or when lease comes up for renewal.

Responsible Agency: Idaho Department of Lands

Task 4: Develop and implement short-term and long-term monitoring in State grazing allotments

Milestones: Already in place, or looked at when the lease comes up for renewal.

Responsible Agency: Idaho Department of Lands

10/25/2004

Appendix 3 - Implementation Plan Projects

In December, Land Management Agencies will meet with DEQ to document what accomplishments were made over the field season to improve water quality.

2004 Soil Conservation Commission
Bureau of Land Management
Department of Lands

List Projects Here: